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himself. He revolutionised the design of reservoir spill-ways, which effected a considerable saving of expense to the Government, and followed this up by designing a hydraulic system for irrigation canals which has since been largely adopted in every province throughout India.

On the outbreak of the war in 1914 he was recalled to military duties. He was wounded in the Suvla Bay landing at Gallipoli in 1915, and was afterwards sent to India, where he was appointed A.C.R.E. at Karachi. On the outbreak of the Afghan war he was appointed C.R.E. of the 2nd Division. Later, in the intense heat in Peshawar, his health broke down, and, despite a short rest in the hills, he was attacked by malaria in an acute form, and ordered home. He died, however, in a hospital at Marseilles on 1920 March 28.

Major Garrett was greatly interested in astronomy, and restored the old observatory at Jeypore while stationed there as State Engineer. He also possessed a large reflecting telescope, and intended in the days of greater leisure to which he looked forward to devote his time largely to the science.

In 1900 he married Ida, the daughter of the late Rev. J. F. A. Gawin, who survives him.

He was elected a Fellow of the Society on 1905 January 13.

John Grigg was born in 1838 in the Isle of Thanet, being the youngest son of James Grigg. He received a musical, scientific, and commercial education, his father being a prominent member of the firm of Wells & Co. After his father's death he was engaged successively in the music and furnishing trades, giving much of his spare time to choral singing; thus he sang in the Handel Festival in 1857. He settled in New Zealand in 1863, living in Auckland till 1868 and then moving to Thames, where he remained till his death.

He taught singing under the Education Board, with very successful results. A song that he composed, "My own New Zealand Home," is stated to rank almost as a national anthem. He was for a long time the conductor of the Thames Choral Society, which he helped to found, and was for ten years the organist and one of the trustees of the Baptist Church.

The occurrence of the Transit of Venus in 1874 revived an interest in astronomy which he had shown in boyhood, and he made successful observations both of that transit and its successor in 1882. He then erected an observatory, with transit circle and equatorial, which was completed in 1884.

He joined the British Astronomical Association in 1897, working with special zeal and success in the comet section. He devised a semi-graphical method of forming ephemerides of periodic comets, and it was with the aid of a self-constructed ephemeris that he was the first to detect Encke's Comet at its 1898 return, in which the conditions were unusually difficult, the only other observer being Mr. Tebbutt.

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Grigg also discovered three unexpected comets. In the case of 1902 II. there was an unfortunate miscarriage of a message addressed to Mr. Baracchi at Melbourne, so that Grigg was the sole observer and the sole orbit computer. But the comets 1903 III. and 1907 II. were both well observed. In the latter case there was again a delay in distributing the news, and Mr. Mellish of Washburn Observatory found the comet independently, five days after Grigg; it is known as Grigg-Mellish.

Grigg received two medals from the Astronomical Society of the Pacific for his cometary discoveries. He was also successful in cometary photography, obtaining one of the few good plates of the bright comet 1901 I.

Grigg also did good work in spreading astronomical knowledge by frequent lectures, and the contribution of regular notes to the *Otago Witness.*

He died on 1920 June 20, at the age of 82, leaving a son, Mr. Felix Grigg, who is working in the Dominion Laboratory, Wellington, N.Z.

He was elected a Fellow of the Society on 1906 June 8.

A. C. D. C.

Maxwell Hall, Barrister-at-Law, the son of John and Charlotte Hall, was born at Cheltenham in 1845. He was educated at a private school and subsequently at King's College, London, and Pembroke College, Cambridge, graduating as a Wrangler in 1871. In the following year he settled in Jamaica and erected an observatory furnished with a 3-inch transit instrument and a 4-inch equatorial refractor, both by Messrs. Cooke of York. In the course of his astronomical work he observed Mars at the favourable opposition of 1877, and deduced the value $8''\cdot789 \pm 0''\cdot060$ for the solar parallax (*Memoirs*, **44**, 52), which is in very close agreement with the value $8''\cdot78 \pm 0''\cdot012$ derived by Sir David Gill from observations of Mars at the same opposition.

In 1883 and again in 1915 he deduced the rotation-period of Neptune from observations of temporary variations in the planet's light, obtaining the values $7^h\ 55^m$ (*M.N.*, **44**, 257) and $7^h\ 50^m\ 6^s$ (*M.N.*, **75**, 626) respectively. He also observed Halley's Comet in 1910 (*M.N.*, **70**, 615).

A problem in which he was specially interested was that of the sidereal system, and in vol. xliii. p. 157 of the *Memoirs* is a paper by him on this subject. Starting from the assumption that there is "some point of space, material or immaterial, in motion or at rest," round which the sun and stars revolve, he concluded that the centre is neither *Alcyone*, as Mädler had suggested, nor in the constellation *Perseus*, as suggested by Argelander, but lies somewhere on the line passing through the sun and two regions in *Andromeda* and *Hydra* (below *Corvus*) respectively, and at such a distance that the sun and neighbouring stars move round it with almost the same velocity. As viewed from the sun this centre is in R.A. 9° 15′, N.P.D. 63° 28′, which is almost 1° *sp* the 6^m star

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